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ABSTRACT

The study was conducted to determine the impact of day care intervention on the relationship between 60 mothers and their infants, 30 infants being at high risk for progressive, developmental retardation. Ss were divided into three groups: the high risk experimental group (HRE), the infants which were in the day care program; the high risk control group (HRC) representing the home-control group; and the general population sample (GPS). Twenty-five minutes of mother-infant interaction were recorded on videotape. Among findings were that as with the HRC group, the HRE had less overall vocalization during the taping session than did the GPS; that GPS mothers were found to vocalize more alone and to have a greater frequency of maternal vocalization; and that HRE mothers were found to interact more without toys than were the HRC mothers. (Author/SBH)

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Influence of Early Intervention on the Social Relationship Between Mother and Infant

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ABSTRACT

Early intervention during the first year of life for infants at high risk of developmental retardation has taken the infant out of the home and away from the mother during the time in which significant ties are formed between mother and infant. To tamper with the mother-infant relationship is a serious social issue. This tampering cannot be viewed casually. Investigations are needed to determine the effect this early separation has on the social relationship between mother and infant.

INFLUENCE OF EARLY INTERVENTION ON THE SOCIAL RELATIONSHIP BETWEEN MOTHER AND INFANT

Certain early intervention programs have sought to offset non-organic, developmental retardation prevalent in high risk families. The focus of such intervention has been to intervene during the child's years of most rapid growth and development and to prevent, rather than remediate, the learning problems high risk children seem to encounter once they enter school.

Day care intervention during the first year of life has taken the child out of the home and away from the mother during the time in which significant ties are formed between mother and infant. To tamper with the mother-infant relationship is a serious social issue. This tampering cannot be viewed casually. Investigations are needed to determine the effect this early separation has on the social relationship between mother and infant.

The purpose of this study was to determine the impact of day care intervention on the relationship between mother and child. Measures were taken to assess the developmental status of the infant, the pattern of mother-infant interaction in a controlled naturalistic setting, the home from which the infant came, and the attitudes of the mother concerning child-rearing and family life. The study addressed itself to assessing the initial effects on the mother-infant relationship of child centered day care intervention, leaving aside the issue of how long the effects would endure.

Subjects

Included in the study were 60 infants and their mothers representing three groups. The first two groups were composed of infants at high risk for progressive, developmental retardation who were enrolled in the Carolina Abecedarian Project at the Frank Porter Graham Child Development Center in Chapel Hill, North Carolina, USA. The High Risk Experimental group (HRE) consisted of 15 mother-infant dyads, the infants of which were in the day care program for eight hours a day, five days a week beginning at about two months of age. The High Risk Control group (HRC) consisted of 15 mother-infant dyads representing the home-control group, the infants of which were receiving medical, nutritional and supportive services, yet were being reared in the high risk homes. In the third group were 30 mother-infant dyads representing a stratified sample of the general population (GPS) and selected at random from the local community. Selected characteristics of the three groups are presented in Table 1.

Insert Table 1 about here

Before being assigned to groups, the high risk families were matched on the variables of age of infant, sex, race, socioeconomic status, number of siblings, and mother's measured intelligence. The group representing the general population was matched to the high risk groups on age, sex of infant and live birth parity. The age of infants in all three groups ranged from 3½ to 9½ months, with a mean age of approximately 200 days.

Comparison of group composition on demographic data reveals the diverse characteristics between the high risk and general population samples.

Procedure

Instrumentation. In addition to determining a high risk rating and the general demographic characteristics of each family, specific behaviors of mother and infant were assessed in a controlled naturalistic setting similar to the one used by Lewis and Goldberg (1968). Twenty-five minutes of interaction between mother and infant were recorded on videotape in a room furnished with comfortable, home-like furniture, including a crib and toys -or the infant and a television and current magazines for the mother. Each mother was given the opportunity to interact with her child, but interaction was not required.

Categories of behavior. An Esterline Angus Event Recorder was used to record both frequency and duration of behaviors for each of the following categories. Table 2 identifies the categories coded for both mother and infant.

Insert Table 2 about here

Inter-observer reliability in the coding of the tapes by three trained observers ranged from 91% to 100%, with a mean across categories of 95.6%. In each group, twenty percent of the tapes coded for reliability.

Results

A multivariate analysis of variance (MANOVA) was employed to determine the significance of differences across groups in the 15 criterion variables. The 1971 Cramer technique was used to analyze time accumulation in each category for the 25-minute interaction session. A multivariate comparison of

all groups using the Wilks Lambada Criterion results in significant differences among groups F (30,86) = 2.75, $p < .001$. The corresponding univariate F-tests were conducted for the 15 criterion variables to determine which criteria were significant.

Vocalization data. Because differences in earlier studies had been found relative to maternal and child vocalizations, specific analyses were used to identify possible variations. In addition to the analyses run on the duration of vocalization behavior, the tapes were recoded in 10-second time units to determine frequency. Within the vocalization counts were made in four areas: (1) neither mother nor child vocalizing (NoVoc), (2) infant vocalizes, mother did not vocalizes (InfVoc), (3) mother vocalized, infant did not vocalize (MatVoc), and (4) both mother and infant vocalized (BothVoc). Two additional categories were used to obtain the total frequencies of infant and mother vocalization (SumInfVoc and SumMatVoc).

HRC vs GPS. Significant differences were obtained for all but one criterion in the comparison between the high risk control group and the general population. The mother and infant in the GPS vocalized significantly more than did those in the HRC, F (1,43) = 17.57, $p < .001$. In the GPS, the mother also vocalized significantly more by herself, F (1,43) = 6.99, $p < .01$. In addition, significant differences were obtained between the GPS as compared to the HRC on infant and mother vocalizing together, F (1,43) = 14.38, $p < .001$, and the total frequencies of vocalization for both both infant, F (1,43) = 7.85, $p < .007$, and mother, F (1,43) = 12.42, $p < .001$. No significant differences, F (1,43) = .42, $p < .52$ were obtained between the HRC and GPS on infant vocalizing alone.

HRE vs GPS. Significant differences between the high risk day care and general population were also obtained. These differences seemed to reflect variations involving basic maternal behavior. The GPS mothers were found to talk more to their infants when the infants were not talking, $F = (1,43) = 4.4$, $p < .04$. The GPS mothers also had a higher total maternal vocalization frequency, F (1,43) = 4.59, $p < .04$. Both the mother and the infant in the HRE group were found to vocalize less than the mother and infant in the GPS, F (1,43) = 5.85, $p < .02$.

HRE vs HRC. In the comparison between the two high risk groups, significant differences were obtained, in favor of the HRE, on both mother and infant vocalizing together, F (1,28) = 6.05, $p < .02$, and on the total infant vocalization, F (1,28) = 8.04, $p < .006$. No other areas were significant between the HRE and HRC.

Discussion

Findings regarding mother-infant vocalization data reflected basic differences between the high risk infants and the more advantaged subjects. The frequency counts of vocalization data indicate interesting variations between the high risk day care and general population samples. As with the HRC group, the HRE had less overall vocalization during the taping session than did the GPS. Of particular interest is the fact that counts of vocalizations on the part of the infant did not differentiate between the HRE and GPS groups. Counts of infant vocalizing alone, infant and mother vocalizing together, and sum of infant vocalizing did not identify group differences. The HRE and GPS were comparable on all three measures involving infant vocalization.

Differences were discernible when comparing data involving maternal vocalization. The GPS mothers were found to vocalize more alone and to have a greater frequency of maternal vocalization. This being the case, taking the infant out of the home for day care programming apparently makes the infants' vocalization resemble that of the more advantaged infants in the general population, but it does not alter overall frequency of maternal vocalization. The fact that the HRE mother and infant vocalize together at approximately the same rate as the GPS mother infant may indicate the infants' ability to stimulate maternal vocalization that might otherwise be less temporally tied to infant vocalization.

Comparison between the two high risk groups reflect the differences that many will attribute to day care. By taking the infant out of the home and away from his mother, while at the same time providing a highly stimulating environment and care, infant behavior has been altered. Significant differences were found in many areas.

Although not discussed here, duration counts of behavior also identified variations on the part of both mother and infant (Ramey and Mills, 1978). High risk infants receiving day care stimulation vocalized significantly more than did their age-mates who spent their days at home in high risk settings. The HRE infants also interacted more with their mothers both with toys and without toys. Time during the taping session was spent in more interactive behavior for the day care group than for the home-reared group.

Since HRE mothers were found to interact more without toys than were the HRC, the day care infants received a greater intensity of social stimulation during the taping session. Not only were their mothers interacting

with them more, they were also talking with, and touching them more. The infants apparently responded positively to this behavior, since they responded by vocalizing during this interaction. The HRC mothers, by interacting less with their infants without toys, denied their infants the added social contact involved in this reciprocal relationship. This would tend to support Gardner's (1978) contention that it is the quality of interaction, rather than the quantity, that is more important in the growth of attachment between mother and infant.

Conclusions

The early years in a child's development are of the utmost importance in determining what success the child will later have. Further investigations are needed to assess the influence on later development of taking the infant out of the home. Although in the study discussed here, initial results from intervention were positive, child-centered day care which completely removes the infant from the home for substantial periods of the time may not be the best approach to early intervention. Other studies are needed to answer the following: Are the favorable results found in this study maintained in later years? Do the children who have entered education at such an early age achieve better in school, both intellectually and emotionally? Are there other forms of intervention which would be as beneficial, yet not remove the child from the home so early? Are there differences among children and families which make some more amenable to such early intervention while intervention with others would be better delayed?

These and other questions must be addressed before early intervention is seen as the panacea for preventing later learning problems. Let's not "save" the child intellectually only to hurt him emotionally.

Table 1

SELECTED CHARACTERISTICS OF THE HIGH RISK FAMILIES (N = 30)

COMPARED WITH FAMILIES FROM THE GENERAL POPULATION (N = 30)

CHARACTERISTIC	HIGH RISK	GENERAL
Race of Families		
Black	100%	20%
Caucasian	0%	80%
Average Age of Infants (Months)	6.5	6.6
Sex of Offspring		
Male	33%	33%
Female	67%	67%
Birth Order: First Born	50%	50%
Average Age of Mothers (Years)	22.5	27.3
Mother's Education (Percentage)		
12 years or less	100%	17%
Greater than 12 years	0%	83%*
Average Level Father's Education	10 years	College Graduate**
Average Annual Family Income	$1500	$10,780***

*30% GPS Mothers had graduate education
**70% GPS Fathers had graduate education
***20% GPS Families had annual incomes over $15,000

Table 2

CATEGORIES OF BEHAVIOR

PARTICIPANT	CATEGORIES (CRITERION VARIABLES)
MOTHER	Demonstrate Toys Talk to Child Television Set On Read to Child Read to Self Touch Child Hold Child Interact with Child (without Toys)
CHILD	Feeding/Sleeping Child Vocalization Child in Crib Play with Toys Interact with Mother and Toys Child on Furniture Fuss/Cry

Table 3

Vocalization Means and Standard Deviations

		No Voc	Inf Voc	Mat Voc	Both Voc	Sum Inf Voc	Sum Mat Voc
HRE	M	64.467	24.267	40.600	20.267	44.534	60.867
	SD	27.635	14.355	17.586	15.888	19.013	30.977
HRC	M	84.733	16.733	38.000	10.533	27.266	48.533
	SD	28.126	16.654	21.267	20.736	27.066	31.912
GPS	M	43.433	19.300	61.733	25.533	44.833	87.267
	SD	29.821	17.732	33.757	18.201	24.704	38.893

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